

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/CN/2003/00991

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B23K37/053 B23K37/04 B25B5/14 B25B5/06 B25B5/12
B25B11/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B23K B25B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

PAJ, EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 175 735 A (J.R. GRIFFIN) 27 November 1979 (1979-11-27)	1,6-9
A	column 2, line 35 -column 3, line 68; figures 1,2	2-5
X	US 5 067 696 A (A.D MORLEY) 26 November 1991 (1991-11-26)	1,6,7
A	column 4, line 35 -column 5, line 31; figures 1-4	2,8,9
X	US 5 839 647 A (D.A. ORNE) 24 November 1998 (1998-11-24)	1,6,7
A	column 2, line 39 -column 3, line 3; figures 2-4	2,8,9
X	US 2 172 461 A (C.T. WHITESCARVER) 12 September 1939 (1939-09-12) the whole document	1,6,7
	-/-	

☒ Further documents are listed in the continuation of box C:☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

17 October 2003

Date of mailing of the international search report

03/11/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Jeggy, T

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/03/00991

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 189 878 B1 (L. MEESE) 20 February 2001 (2001-02-20) figures 1-4	2-5
A	US 4 936 500 A (G.W. MCCLURE) 26 June 1990 (1990-06-26) cited in the application the whole document	1,8,9

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/03/00991

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4175735	A	27-11-1979	NONE	
US 5067696	A	26-11-1991	NL 8702239 A	17-04-1989
US 5839647	A	24-11-1998	NONE	
US 2172461	A	12-09-1939	NONE	
US 6189878	B1	20-02-2001	DE 19704912 A1 AT 217236 T WO 9834761 A2 DE 59804054 D1 EP 0958108 A2 ES 2176981 T3	20-08-1998 15-05-2002 13-08-1998 13-06-2002 24-11-1999 01-12-2002
US 4936500	A	26-06-1990	US 4846391 A AT 96358 T AU 628564 B2 AU 5570990 A CA 2017194 A1 DE 69004158 D1 DE 69004158 T2 DK 402649 T3 EP 0402649 A1 ES 2045638 T3 ZA 9003736 A CA 1328670 C	11-07-1989 15-11-1993 17-09-1992 22-11-1990 18-11-1990 02-12-1993 14-04-1994 28-02-1994 19-12-1990 16-01-1994 27-03-1991 19-04-1994